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GEOGRAPHICAL RECORD

AMERICAN GEOGRAPHICAL SOCIETY

Meetings of March. A semi-monthly meeting of the American Geographical Society was held on Tuesday evening, March 9, at the Engineering Societies' Building, 29 West Thirty-ninth Street. President Greenough presided. The lecturer of the evening was Professor Henry E. Crampton of Columbia University, curator of invertebrate zoölogy at the American Museum of Natural History; he delivered an address entitled ''Among the Islands of the South Seas'' which dealt with his expeditions to the South Pacific in the years 1906 to 1909. On March 23 a monthly meeting of the Society was held. President Greenough presided. He submitted the names of 12 candidates for Fellowship, each of whom had been approved by the Council, and they were confirmed as Fellows of the Society. Thereupon Dr. Fay-Cooper Cole, the anthropologist of the Field Museum of Natural History, Chicago, delivered an address entitled ''Glimpses of Japan.''

NORTH AMERICA

The Country's Health. Geographers on the one hand and public health officials on the other are more and more realizing the intimate relation between geography and health. Therefore geographers ought to know of the little bulletin which has recently been inaugurated by the Metropolitan Life Insurance Company of New York. It bears the dry title of *Statistical Bulletin*, but ''The Nation's Health'' would better express its distinctly interesting character. The records of the company furnish a general survey of the health of the country as a whole. On this basis the editor of the bulletin prepares little articles stating the outstanding facts for the preceding month. For example, a page of the February bulletin is devoted to the difference between the influenza epidemic of 1920 and the far worse epidemic of 1918. Then a half page discusses the unusually low mortality during January, 1920. This favorable condition is rather surprising since the prolonged low temperature, at least in the East, would lead to the expectation of a high death rate. Perhaps the widespread cover of snow and the consequent freedom of the air from dust offers the explanation. Other articles castigate us for allowing such things as epidemics of diphtheria and explain the favorable decline which tuberculosis continues to show. A particularly interesting table shows the extent by which the average life would be lengthened if we could stamp out tuberculosis. For example, if there were no tuberculosis, the average boy 10 to 15 years of age would have the prospect of living about four years longer than he has at present. This, like many other conditions of health, has a geographical bearing, for one of the chief cures for tuberculosis is the right kind of air. If future issues are as interesting as the first ones the *Statistical Bulletin* is well worth keeping in touch with. ELLSWORTH HUNTINGTON

Weather and the Winter-Wheat Yield in Ohio. A recent number of the *Monthly Weather Review* (December, 1919, pp. 841-847) contains the results of a statistical study, by T. A. Blair, of the weather factors affecting the yield of winter wheat in Ohio. Because of the difficulty of securing extensive data for other elements, it is necessary to deal chiefly with temperature and precipitation values. Because of the relatively large and well-distributed rainfall of Ohio, temperature variations have more influence than precipitation variations.

For the state as a whole correlations of monthly weather values with the ''condition'' reports of the Bureau of Crop Estimates and with the reported yields show no very close relationships. The correlations with condition give a general indication that a wet autumn, a warm and dry winter and spring, especially a warm March, and a cool and wet May are the most favorable weather conditions. Yield correlations suggest a warm March and June and a cool and dry May as the only important requisites for a good yield.

In Fulton County, in northwestern Ohio, and in three counties in the central part of the state, certain ten-day periods in April, May, and June are found to exert a more effective influence on the yield than all other weather conditions combined, except that in Fulton County the March snowfall is also an important factor. It is weather conditions during these ten-day periods, especially temperature conditions, that largely determine yield. R. DEC. WARD

Snowfall on Mt. Rainier. Daily records of snowfall were kept during most of the season of 1916-17 at Paradise Inn, on the southern slope of Mt. Rainier, at an elevation of 5,500 feet. Although the observations were not begun until November 24, 1916, the total depth of snowfall from that date up to the last snowstorm before midsummer, in 1917, was apparently greater than that for any other station in the United States for any entire season, with the single exception of Tamarack, Cal., in 1906-07. This interesting fact is reported by Lawrence Fisher, in a recent discussion of the snowfall on Mt. Rainier (*Monthly Weather Rev.*, Vol. 46, 1918, pp. 327-330). The Rainier snowfall, above referred to, was 789.5 inches. Other very heavy snowfalls previously recorded in the United States are as follows: Summit, Cal. (7,017 feet), 1879-80, 783 inches; Musick Station, Ore. (5,000 feet), 1912-13, 612.7 inches; Tamarack, Cal. (8,000 feet), 1906-07, 884 inches; summit of Pike's Peak (14,134 feet), 1892-93, 743.3 inches.

The record at Paradise Inn is the first which has been obtained west of the summit of the Cascades in Washington at so great an elevation. The railways cross the mountains at comparatively low elevations. The highest mining camps where observations have been made are on the eastern (leeward) slopes of the Cascades. The season of 1916-17 does not seem to have been one of unusually heavy snowfall, judging by the records at other mountain stations. Nor is Paradise Inn located at what would theoretically seem to be the region most favorable for a maximum precipitation. At the elevation of the inn the snow usually disappears in the summer. Above it are the permanent snowfields, and snow falls at times when rain occurs at the inn. It seems likely, therefore, that the maximum annual snowfall will eventually be found to occur at a greater altitude than 5,500 feet. R. DeC. Ward

EUROPE

The Distribution of Population in Southern Macedonia. Southern Macedonia, which epitomizes in itself the geography of the Balkan Peninsula as a meeting point of regions and peoples (see the article ''The Natural Regions of the Balkan Peninsula'' in this number), is especially deserving of an intensive geographic study. The profitable pursuit of such a study is suggested by Captain A. G. Ogilvie in his paper ''A Contribution to the Geography of Macedonia'' in the January, 1920, number of the *Geographical Journal.* It is stimulated further by the probabilities of rapid transformation of the region as a result of recent political events. Probable changes in the distribution of the population are forecast by Captain Ogilvie.

The region is one of a strongly contrasted relief of plateaus and basins. The basins, all of tectonic origin and formerly lake-filled, are now terraced and floored by alluvial deposits. In them the water table is never far from the surface, and water may be obtained from wells sunk anywhere, an important matter in a climate of light rainfall tending to summer drought. On the crystalline rocks of the plateaus springs are far apart; and, as on the chalk of Picardy, villages are perforce grouped round them, empty spaces intervening. In the hills, furthermore, agriculture is intermittent, and a constant fight is made against the scrub vegetation. Yet in this essentially agricultural land the inequalities of population distribution are nothing like so pronounced as one would expect. The basins, it is true, are the centers of life and communication, and they claim the largest and most prosperous villages; but the population on the plateaus is surprisingly dense. Political circumstances are largely responsible. Given a normal development under stable government and conditions of security, population will be naturally attracted to the plains.

The available agricultural area in the basins may be increased by drainage of the swamps. At the same time this will help towards the elimination of malaria, which, says Captain Ogilvie, is ''responsible for the bad name of the country as much as the proverbial state of political unrest.'' Irrigation should be organized and regulated. While certain crops, rice for example, can only be grown under irrigation, everywhere in the plains agricultural values will rise with irrigation. It is already practiced in the Struma valley and on some of the larger alluvial fans. The late Turkish landowners of the big *chifliks* of the plains have already disappeared, and there is opportunity for creation of an equitable system of land tenure. Release of the land from the Turkish yoke should also bring about improvement in agricultural methods and the introduction of modern practices to supersede the primitive methods exemplified by the general use of the wooden plow, the mattock, and the sickle. A number of Greek-owned farms with their specialized devotion to one crop—tobacco, rice, cotton, or cereals—show the possibilities of the fertile plains.

Agriculture and population, however, have probably reached their maximum extension in the hills. Here large areas may most profitably be restored to their pristine forest cover of valuable timber—oak, beech, chestnut. Elsewhere upland scrub country should be devoted as now to the raising of sheep and goats. At present the pastoral pursuits of southern Macedonia are largely conducted by the migratory Kutzo-Vlakhs. In the redistribution of lands care must be taken to reserve winter pasture for the nomads and their flocks in the plains. With the substitution of modern fishing craft for the present archaic types and with the improvement of harbors the maritime population will also gain. Of course, bound up with general progress will be the improvement of the means of communication, now so sadly deficient.

POLAR REGIONS

Norwegian Surveys in Spitsbergen during 1919. The systematic survey of Spitsbergen by Norwegians begun in 1906 and since 1911 carried out annually, as described in the *Geographical Review* (Vol. 8, 1919, pp. 216 and 218), was continued in the summer of 1919 under the leadership of Adolf Hoel. The party comprised three surveyors, two hydrographers, and two geologists. The land between Horn Sound and South Cape (West Spitsbergen) was surveyed, and complementary surveys were carried out around Bell Sound, the total area mapped amounting to 520 square miles. Simultaneously the hydrographic survey was extended from the northern entrance of Bell Sound to the mouth of Horn Sound. Soundings were taken along this coastal section to a distance of 10 to 20 nautical miles off shore. The area hydrographically surveyed during the season is estimated to be 1,620 square miles. The geologists worked principally in the coastal strip between Horn Sound and South Cape; there for the first time they found fossils (crinoids) in the Hecla Hoek formation (locally metamorphosed Silurian rocks). In 1919 the Norwegian Hydrographic Office published a very valuable chart embodying the Norwegian hydrographic surveys of the Spitsbergen coasts to 1918. It is entitled ''Nordishavet fra Norge (Tromsö og Varanger) til Spitsbergen'' (The Arctic Ocean from Norway (Tromsö and Varanger) to Spitsbergen). The meridional scale is 1:100,000 in 76° N. It differs noticeably from the British Admiralty chart of these waters in the representation of the coast line and the outlines of the fiords. It also contains a great many new soundings on the bank north of Bear Island and off the western coast of Spitsbergen. This chart will be of great value to geographers.

CHARLES RABOT

Completion of Rasmussen's Study of the Greenland Eskimos. Knud Rasmussen, the well-known Danish explorer whose activities have been reviewed from time to time in the *Geographical Review* and the account of whose 1916-18 expedition to northern Greenland was published in the August and September, 1919, numbers, returned late in 1919, according to information received by the undersigned, from Ammassalik, the only settlement of any consequence on the east coast of Greenland. This visit to Ammassalik completes Rasmussen's study of the Eskimos of the entire Greenland coast. He has visited every group from Ammassalik to Etah and knows every Eskimo in Greenland personally. It is safe to say that no one has ever come into such direct intimate contact with a whole people as he has. Part Eskimo himself, born and partly educated in Greenland and trained in languages and ethnology in the University of Copenhagen, he has been especially well prepared to make this study, and he has devoted his life thus far to that work and exploration. It is his ambition to make a comprehensive comparative study of all the Eskimo race from Ammassalik to Siberia.

In his visit to East Greenland he has studied the culture and the language of the East Greenland Eskimos in relation to those of the Eskimos on the western coast of the great island. This comparative study has revealed many facts of noteworthy significance, which he intends to present in the near future. He was surprised to find that the East Greenland Eskimos preserve many of the customs of the Central Eskimos, who still inhabit the ancestral home of the race about Hudson Bay. He found that they are more closely related to the Central Eskimos than are any of the other tribes of the entire Greenland coast and that they have only recently been affected by contact with the Greenland west-coast culture.

Rasmussen made collections of their traditions and folk-lore, of their cats' cradles, and of their artifacts. He studied their language and their customs very closely in order to determine their relationship to the other tribes of Greenland. He states that, though the Ammassalik Eskimos have been superficially very much modified by the Danish administration of the settlement, they are at heart the same primitive people that they were before the coming of the white man. In the immediate vicinity of the settlement they have adopted Danish ways, but as soon as they leave the vicinage of the trading station they lapse into their old primitive life. The outlying settlements are as typically Eskimo as they ever were.

With his characteristic directness and insight into Eskimo character, Rasmussen has penetrated deeply into their culture and history. He expects soon to publish the results of this latest expedition in full, and though it has not been of a spectacular or popularly attractive character he thinks that it will yield a wealth of scientific material.

W. Elmer Ekblaw

PHYSICAL GEOGRAPHY

Desert Erosion as Illustrated by a Comparison Between the Algerian Sahara and the Libyan Desert. The development of land forms in a humid climate has been thoroughly worked out, but the evolution of the topography in an arid region has not been as satisfactorily explained. Professor W. M. Davis has sketched the main lines of probable development, but he has left to others the task of amplifying and verifying his account and of finding examples of deserts in the varied stages of development.

M. E.-F. Gautier, in a recent paper entitled "Deserts Comparés" (*Ann. de Géogr.*, Nov. 15, 1919), helps to fill in some of the gaps in our knowledge of deserts from the physiographic point of view. He is thoroughly versed in the topography of the Algerian Sahara, and during a few weeks' reconnaissance in the Libyan Desert was struck by the difference between the land forms of the two deserts. This difference he interprets as signifying that the Libyan Desert is in a much later stage of development than the Algerian Sahara, and his description of the relative topography of the young and old deserts is extremely interesting.

The first evidence he brings to support his theory is drawn from the results of fluvial erosion, the *weds* (*wadis* in Egyptian Arabic) of Algeria, the oases of Egypt, and certain delta deposits which are found in Egypt. The *weds* are dry watercourses, related to each other in the same way as are the stream beds of a humid region, tributary channels, graded in size and gradient, leading to trunk streams, etc. The oases on the other hand are basin-like depressions, surrounded by a more or less continuous escarpment, and no trace of a former river system is apparent. Evidently there have been streams in Algeria during a comparatively recent period, while the Libyan Desert has suffered wind erosion for a far longer time. The same conclusion may be drawn from the study of the extensive delta deposits at Wadi Natrun and Moghara. These deltas are of Tertiary age and must have been accompanied by great fluvial erosion. The leveling of all trace of the great valleys corresponding to the deltas could only be accomplished by wind erosion continued during a very long period. The complete absence of all trace of a valley system contrasts strikingly with the fresh-cut Quaternary valleys of Algeria.

The part of the evidence based on fluvial erosion leaves little to be desired; the rest, however, is not as convincing. The character of the Oligocene deposits is next examined. In Algeria these deposits consist of vast alluvial plains, whereas in Egypt the alluvial deposits have been so thinned by wind erosion that often the level bare rock floor of the desert, scoured by the wind, is exposed. These observations, taken in connection with the work of McGee in the Sonora desert, suggest that the later phases of desert physiography may be characterized by bare level expanses where the bed rock is exposed. Before, however, this piece of evidence can be taken to indicate the relative age of the two deserts in question one must be sure that the deposits compared are of the same date, and this is still problematic, the "Oligocene" having been applied provisionally.

The next piece of evidence is that supplied by the dunes. Those of the Algerian desert are related to the alluvial plains. Where there are wide expanses, open to the wind, the dunes pile up. The dunes of Egypt on the other hand are distributed much more unevenly. In the eastern part they are confined to a long narrow line of thin dunes, running almost due north and south. M. Gautier hazards the suggestion that this line may mark the frontier between the natural regions which were once to be differentiated in the Sahara, i. e. the desert in the east and the humid area in the west.

According to M. Gautier's theory this division of the Sahara existed when the Quaternary valleys of Algeria were cut. The dunes of the eastern part of the Sahara are very different again. They are piled up to such an enormous thickness and cover so extensive an area that the land is hardly known. The dunes are as different as possible from the smaller masses of dunes in Algeria, which are not impenetrable. M. Gautier considers that the greater mass of the Egyptian dunes is evidence that more time has been taken to form them. There are other factors, however, it would seem, that might cause dune-formation to go on more intensely in one part of the desert than in another.

E. M. Sanders

The Distribution of Maximum Floods. Professor Alfred J. Henry, in charge of the River and Flood Service of the Weather Bureau, read before the American Meteorological Society at New York, January 3, 1920, a paper on "The Distribution of Maximum Floods" (*Monthly Weather Rev.*, December, 1919, pp. 861-867). The records of both American and European rivers show an average of seven to ten great floods per century. Such floods are primarily due to precipitation, and the precipitation, in the form of rain, which produces floods may be of two distinct types: (a) so intense and widely distributed as to produce flooding regardless of antecedent conditions; (b) moderate rains continued intermittently for eight to ten days or more with antecedent conditions favorable to a high run-off.

There appears to be no orderly progression in the magnitude of floods with the lapse of years, i. e. the absolute maximum flood of any 100-year period is not necessarily greater than the absolute maximum flood for the preceding 100 years. The magnitude of great floods with respect to the average annual flood seems to increase in a geometrical progression but apparently wholly regardless of the march of time. Further, great floods, like great rainfalls, are essentially a local phenomenon, even for the same stream.

R. DEC. WARD